TDMA-TDD BASIC FRAME IN 3GPP AND TSM CELLULAR SYSTEMS
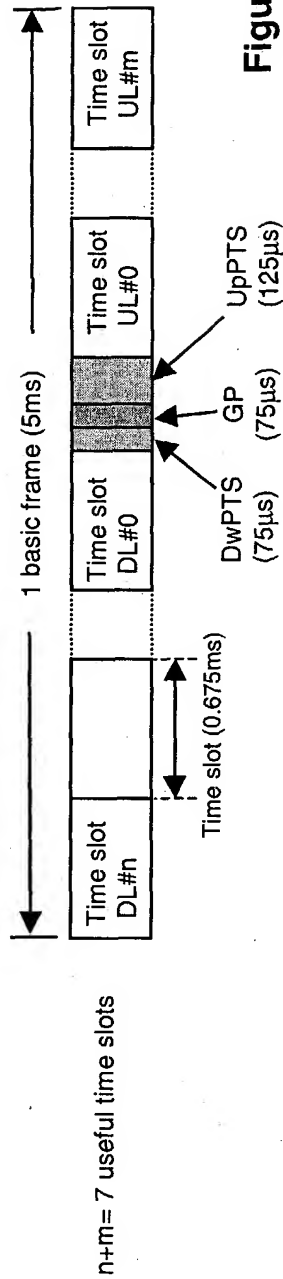
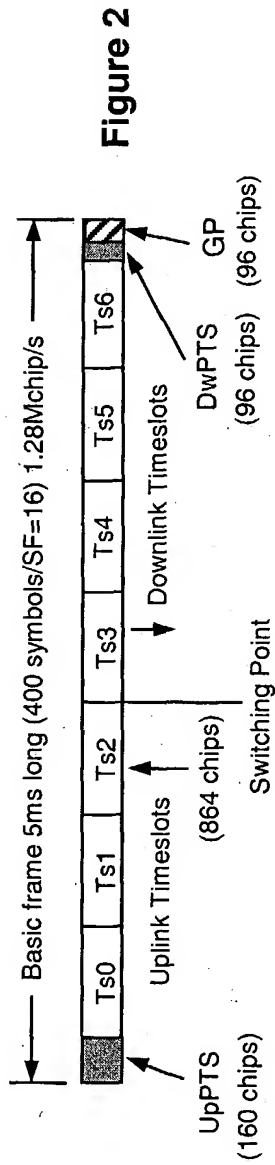n+m= 7 useful time slots

Time slot DL#n		Time slot DL#0	Time slot UL#0	Time slot UL#m

1 basic frame (5ms)

Time slot (0.675ms)

DwPTS (75µs)
GP (75µs)
UpPTS (125µs)

Figure 1

Basic frame 5ms long (400 symbols/SF=16) 1.28Mchip/s

Ts0	Ts1	Ts2	Ts3	Ts4	Ts5	Ts6

UpPTS (160 chips)

Uplink Timeslots
(864 chips)

Switching Point

Downlink Timeslots

DwPTS (96 chips)
GP (96 chips)

Figure 2

UpPTS (125µs)

SYNC1(128chips)	GP(32chips)

Figure 3

DwPTS (75µs)

GP(32chips)	SYNC(64chips)

Figure 4

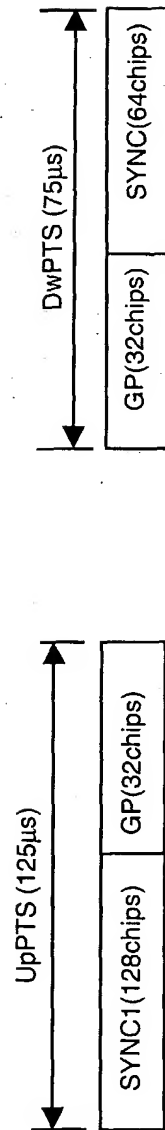| Data symbols (352chips)	Midamble	Data symbols (352chips)	GP

144 chips

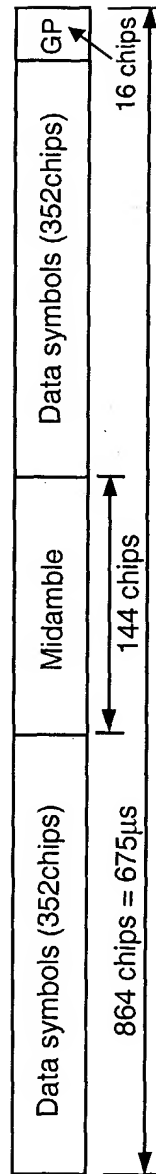16 chips

864 chips = 675µs

Figure 5

POSSIBLE CONFIGURATION OF LGIC AND PHYSIC CHANNELS IN 3GPP AND TSM CELLULAR SYSTEMS
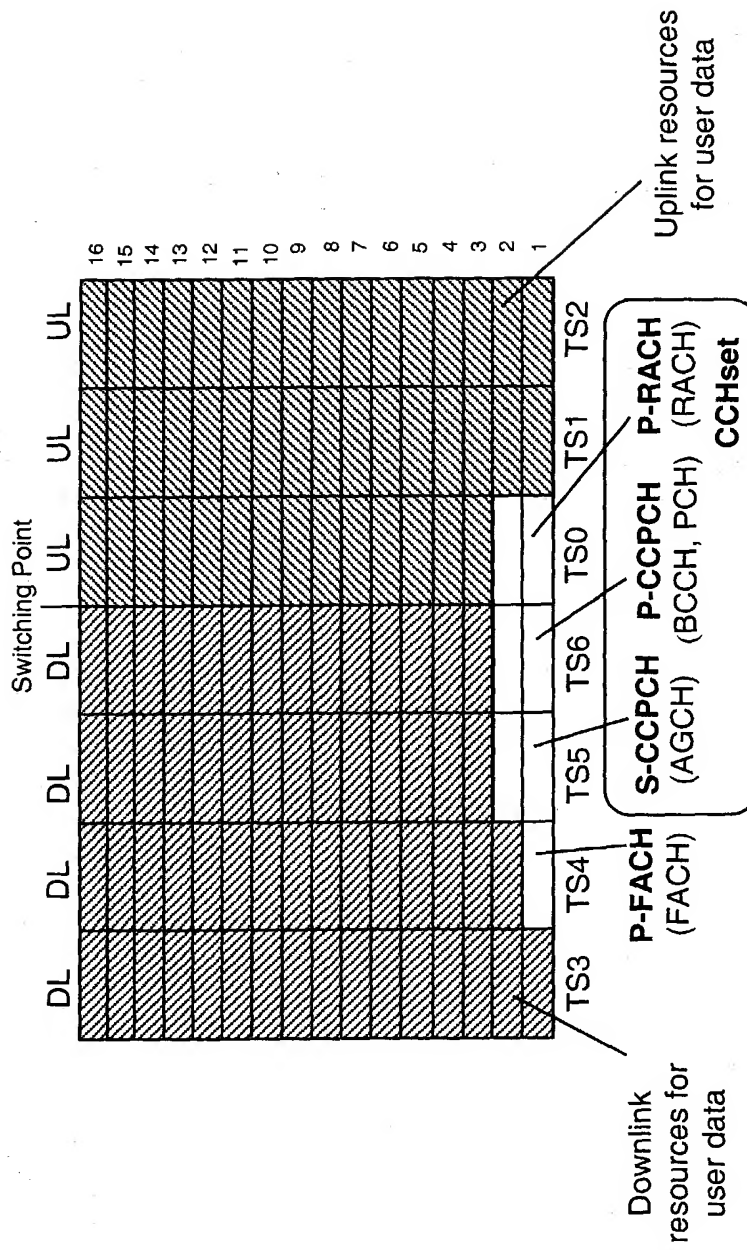
Figure 6

Figure 7: Example of sub-frame occupancy for RACH procedure in TSM mode

sub-frame Number	0	1	2	3	4	5	6	7	8	9
Users/sent signatures	1 2 3 4 5	4			6					
Acknowledged user		1	2	3	4	6				
User sending RACH				1	2	3	4	6	-	-

Figure 8: Example of sub-frames occupancy for configuration 1 in 3GPP

sub-frame Number	0	1	2	3	4	5	6	7	8	9
Users/sent signatures	1 2 3	4								
Acknowledged user		1	2	3	4					
User sending RACH			1	1	2 3	2 3	4	4		

Figure 9: Example of sub-frames occupancy for configuration 2 in 3GPP

sub-frame Number	0	1	2	3	4	5	6	7	8	9
Users sending on UpPCH	1 2 3			4	5					
Acknowledged user		1	2	3	4	5				
User sending RACH			1	1	2	2	4 5	4 5		

Figure 10: Example of sub-frames occupancy for configuration 3 in 3GPP

Sub-frame Number	0	1	2	3	4	5	6	7	8	9
Users sending on UpPCH	1 2 3		4		5					
Acknowledged user		1	2	3	4	5	5			
User sending RACH			1	1	2	2	4 5	4 5		

Figure 11: Example of sub-frames occupancy for configuration 4 in 3GPP

sub-frame Number	0	1	2	3	4	5	6	7	8	9
Users sending on UpPCH	1 2 3				4 5					
Acknowledged user		1	2	3		4	5			
User sending RACH			1	1 2	2		4	4 5	5	

Figure 12: Example of sub-frames occupancy for configuration 5 in 3GPP

sub-frame Number	0	1	2	3	4	5	6	7	8	9
Users sending on UpPCH	1 2 3				4 5					
Acknowledged user		1	2	3		4	5			
User sending RACH			1	1	2	2	4	4	5	5